High BMI, Blood Pressure Go Together in Young Children

BY ROBERT FINN
San Francisco Bureau

ATLANTA — Elevated blood pressure is associated with increased body mass index in children as young as 2 years old, according to results of a large study reported by Dr. Elizabeth B. Rappaport at the annual meeting of the International Society on Hypertension in Blacks.

Among boys 2- to 5-years-old with BMIs above the 95th percentile, 7.8% have systolic or diastolic blood pressures at the 95th percentile or above. This increases to 10.8% in boys 6- to 10-years-old, 20.0% in boys 11- to 15-years-old, and 18.5% in boys 16- to 19-years-old. The results are similar in girls (see chart).

The retrospective study involved 18,618 pediatric primary care patients seen during well-child visits in 2002 at a network of clinics in Delaware (J. Pediatr. 2006;148:195-200). "This is a fairly efficient practice that has a routine of measuring blood pressure in nearly all the children down to age 2 as they come through the door," said Dr. Rappaport of Thomas Jefferson University, Philadelphia. "In most cases they do it by auscultation, and they have the proper cuff sizes and so forth, so we felt these would be reasonably reliable blood pressures."

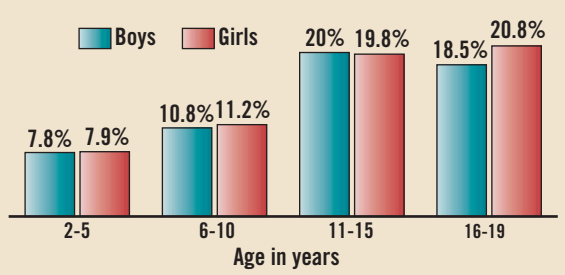
Blood pressure information was entered into electronic medical records at the time of the visit along with data on the child's height, weight, and insurance status. Insurance status was used as a surrogate for socioeconomic status; children with commercial or private insurance were considered to be better off than children with government or public insurance. While data on the child's race were included in the electronic medical record, the investigators regarded this information as unreliable because the child's race was assigned by the registering clerk rather than by self-assignment.

In agreement with other studies, the prevalence of overweight among the children was quite high. Overall, only 63.1% of the children had a BMI under the 85th percentile, which is considered normal weight. The prevalence of overweight—BMI at or above the 95th percentile—was 20.2%. The prevalence of children with BMIs between the 85th and 94th percentile, considered to be at risk for overweight, was 16.7%.

Although many of the children appeared to have elevated blood pressures, the fact that there was only a single blood pressure measurement prevented the investigators from making formal assessments of hypertension. The definition of hypertension in children and adolescents requires systolic or diastolic pressures to be at or above the 95th percentile on at least three separate visits.

Based on that single blood pressure measurement, more than 7.5% of the 2- to 5-year-old children and 10%-20% of the older children and adolescents would require follow-up measurements, Dr. Rappaport said. ■

Percentage of Overweight Children With BP in 95th Percentile



Note: Based on a retrospective study of 18,618 patients.
Source: Dr. Rappaport

ELSEVIER GLOBAL MEDICAL NEWS

Hypertension Risk Soars In Type 2 Diabetic Child

BY MIRIAM E. TUCKER
Senior Writer

WASHINGTON — People of all ages with type 2 diabetes are at increased risk for essential hypertension, but the relationship is exceptionally strong in children and adolescents, Dr. Scott J. Jacober and his associates reported in a poster at the annual scientific sessions of the American Diabetes Association.

Essential hypertension and type 2 diabetes often coexist, but this retrospective study of a nationwide electronic medical records database is believed to be the first to examine the prevalence of essential hypertension by age group in individuals with and without diabetes, said Dr. Jacober, who was with Lilly Research Laboratories, Indianapolis, at the time of the study.

The database contained more than 4 million patients, and the study population, from 49 states during 1996-2005, comprised 231,492 individuals with a physician's diagnosis of type 2 diabetes; patients with type 1 diabetes were excluded. The study also included 1,219,047 people without type 2 diabetes. Overall, essential hypertension was diagnosed in 63% of patients with type 2 diabetes, compared with 40% of those without.

The difference was striking in children younger than age 12 years. Essential hypertension was present in 26.3% of the 219 with type 2 diabetes, compared with 0.5% of the 49,984 without, for an unadjusted odds ratio of 56.1.

Even after adjustment for age, gender, geographic region, and five comorbid conditions (obesity, hyperlipidemia, nephritis, ischemic heart disease, and other forms of heart disease), children aged 0-11 years with type 2 diabetes still were more than 20 times more likely than those without to have essential hypertension, Dr. Jacober and his colleagues reported.

Among adolescents aged 12-19 years, essential hypertension was present in 9.7% of the 691 with type 2 diabetes vs. 1.8% of the 61,129 without. In this age group, the unadjusted odds ratio was 4.4 and the adjusted odds ratio was 2.3, also highly significant.

Differences were less dramatic among adults, but still were statistically significant for all age groups even after adjustment. Among the 2,808 young adults aged 20-29, essential hypertension was present in 21% of those with type 2 diabetes vs. 7.3% of those without, with a 50% increased risk for essential hypertension after adjustment.

Overall, the prevalence of essential hypertension among the diabetics increased by decade of life from 36% at ages 30-39 to 70% at ages 70-79, dropping slightly thereafter to 67% among people over 80 years of age. Among the nondiabetics, essential hypertension was present in 19.5% of the 30- to 39-year-olds, rising to 60% for those aged 70-79, and again dropping slightly thereafter to 58%. ■

Obesity Is Linked With Inflamed Vasculature in Women

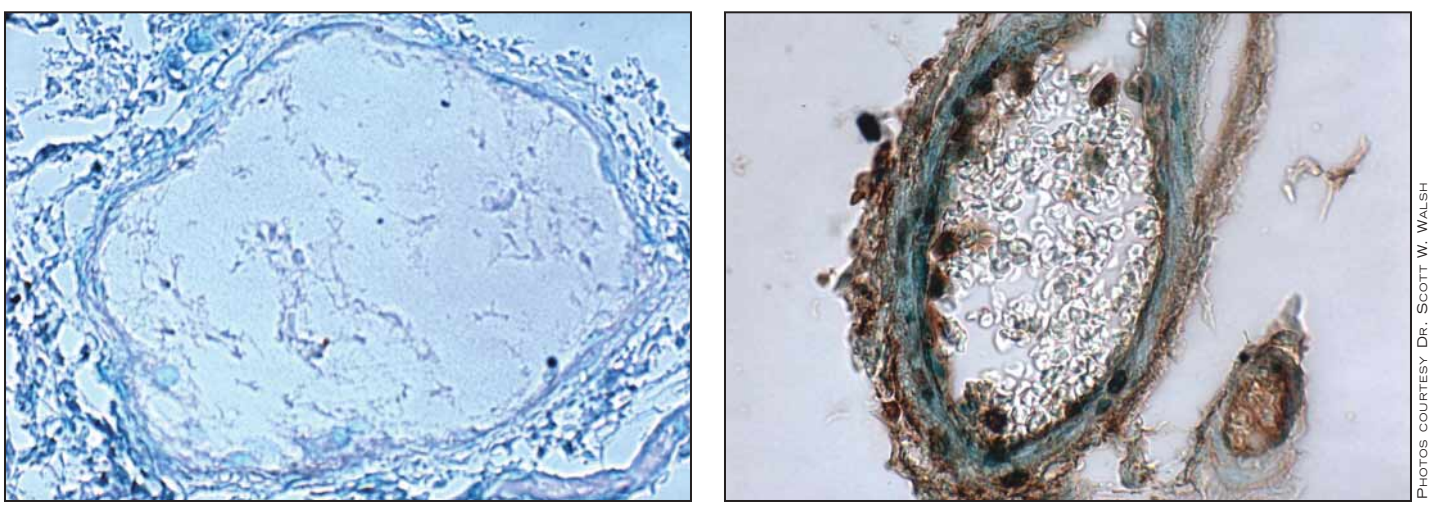
BY MITCHEL L. ZOLER
Philadelphia Bureau

LISBON — Neutrophil infiltration and vascular inflammation were substantially more prevalent and severe in blood vessels from overweight and obese women than in vessels taken from normal-weight women.

"The data indicate that the vasculature of obese women is inflamed and susceptible to developing hypertension," Scott W. Walsh, Ph.D., said at the 15th World Congress of the International Society for the Study of Hypertension in Pregnancy.

"We speculate that neutrophil infiltration and vascular inflammation puts obese women at risk for preeclampsia," said Dr. Walsh, professor of ob.gyn. at Virginia Commonwealth University in Richmond.

Dr. Walsh and associates assessed neutrophil infiltration and vascular inflammation in the blood vessels of adipose tissue biopsies taken from 22 volunteers. Participants were divided into three groups based on their BMI. Five normal-weight women had a BMI of less than 25 kg/m^2, 7 overweight women had a BMI of 25-29.9, and 10 obese women had a BMI of at least 30.



PHOTOS COURTESY DR. SCOTT W. WALSH

The images show blood vessels in fixed, adipose-tissue biopsies that were stained for the cytokine NF-kB, a marker for vascular inflammation. The control specimen (left) is from a normal-weight woman and shows no NF-kB staining. The specimen on the right, from a woman with a BMI of at least 30 kg/m^2, shows heavy staining.

Neutrophil infiltration was measured using a monoclonal-antibody stain against CD66b, a granulocyte membrane antigen. Inflammation was measured with monoclonal-antibody stains against two markers of inflammation, NF-kB and cyclooxygenase (COX)-2.The extent of vessel staining with these reagents was gauged in fixed, adipose tissue specimens by two measures: a visual score scale of 0-3 and stained vessels as a percent of all vessels examined.

By both measurements, all three stains were significantly increased in both overweight and obese women, compared with the normal-weight controls. The greatest staining was in the vessels from obese women. For example, for NF-kB staining, the visual score was about 0.3 in biopsies from normal-weight women, about 1.1 in overweight women, and about 2.6 in obese women. The percent of vessels stained was about 28%, 60%, and 90%, respectively. Similar results were obtained with the stains for neutrophils and for COX-2. ■